UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,147	10/20/2005	Spencer Shorte	B1180/20036	6486

3000 7590 09/29/2009

CAESAR, RIVISE, BERNSTEIN,
COHEN & POKOTILOW, LTD.
11TH FLOOR, SEVEN PENN CENTER
1635 MARKET STREET
PHILADELPHIA, PA 19103-2212

EXAMINER	
BITAR, NANCY	

ART UNIT	PAPER NUMBER
2624	

NOTIFICATION DATE	DELIVERY MODE
09/29/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patents@crbcp.com

Office Action Summary	Application No.	Applicant(s)	
	10/532,147	SHORTE ET AL.	
	Examiner	Art Unit	
	NANCY BITAR	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 May 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/26/2009 has been entered.

Response to Arguments

1. Applicant's arguments, see pages 6-7, filed 5/26/2009, with respect to the rejection(s) of claim(s) 1-22 under 103 (a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Gradl et al (US 7,501,233)

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giovanni De Gasperis (dielectric characterization of living cells by real-time motion estimation) in view of Gradl et al (US 7,501,233)

4. As to claim 1, G.De Gasperis et al. teach the method for high-resolution image recording of at least one object with a microscope comprising the steps of:

positioning the at least one object in a receptacle arranged in an optical axis of the microscope (The frame grabber included a real-time image processor (Image Series 640 C Neighborhood Processor with on-board 4 Mb memory, Matrix Electronic Systems Ltd, Dorval, Canada) that was used to acquire images and to accelerate point-to point image operations, section 4.2, figure 4),generating at least two first data sets per object, wherein the at least two first data sets represent intermediate images of the at least one object with at least two different predetermined orientations relative to the optical axis of the microscope, and the at least two different predetermined orientations of the object are provided by controlled movement of the at least one object relative to the receptacle (figure 4 , note that The first estimator tracks the cell position every three sampling intervals, using an 'optical 2D centre of gravity' calculation, as shown in the appendix. A Cartesian-to-polar coordinate transformation is then implemented from the centre of rotation so that a rotation of the cell in the Cartesian space corresponds to a lateral translation in the polar space. Observed cell motion in a rotating field experiment generally is a combination of translation and rotation, section 2), and evaluating the data sets for obtaining quantitative three dimensional information (SVGA display, note that Human intervention is required only for the selection and positioning of a new cell with laser tweezers and for focus/brightness adjustment prior to the measurement of each spectrum).While G.De Gasperis et

al. meets a number of the limitations of the claimed invention, as pointed out more fully above, G.De Gasperis et al. fails to specifically teach the controlled movement comprises a rotation of the at least one object by an influence of electric field forces , said object being rotated around at least one of a predetermined axis and a predetermined rotation angle.

Specifically, Gradl et al teaches a method for non-destructive measurement of vitality of cells by introducing at least one cell to be examined in a micro system, in which the at least one cell is exposed to high frequency electric rotating fields or electric alternating fields, especially impedance test fields. Gradl teaches exposing the cells to high-frequency, alternating electric fields or impedance test fields, determining a first rotation speed of at least one cell at least one first frequency within a first frequency range from 1 to 4 MHz, determining a second rotation speed of the at least one cell at least one second frequency within a second frequency range from 5 to 100 MHz, and determining a quotient of the second rotation speed divided by the first rotation speed, wherein said quotient is characteristic for at least one of the three different vitality states of the cell, so as to identify at least one cell in a state of apoptosis, at least one cell in a state of necrosis, and at least one cell in a vital state. (See figure 3, claim 1, column 3, lines 64-column 4 lines 1-26). It would have been obvious to one of ordinary skill in the art to control the movement of the rotation of a particle around the predetermined axis in De Gasperis et al in order to improve and enhance the fluorescence microscopy. Therefore, the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention by applicant.

As to claim 2, G.De Gasperis et al. teaches the method according to claim 1, wherein said moving of the at least one object relative to the receptacle comprises a translation of the at least one object by an influence of electric field forces (The performance of this system is characterized in terms of robustness, accuracy and linearity with respect to manual measurements of real spinning cells under the influence of a rotating electric field, abstract and see section 3, page 528).

As to claim 3, G.De Gasperis et al. teaches the method according to claim 2, wherein said translation comprises at least one translation parallel and/or perpendicular relative to the optical axis (figure 7, note that The rotation estimation algorithm correlates, in the polar space, the current frame with the previous frame as a function of left or right translation (in the # direction), such a lateral translation in polar space is the equivalent of a rotation in the cell's Cartesian space, see section 3).

As to claim 4, G.De Gasperis et al. teach the method according to claim 2, wherein said rotation comprises at least one rotation with a rotation axis parallel to the optical axis (Figure 3. The algorithm is composed of two parallel processes—a centre tracking estimator (CTE) and a rotational estimator (RE), page 521).

As to claim 5, G.De Gasperis et al. teach the method according to claim 2, wherein said rotation comprises at least one rotation with a rotation axis slanted relative to the optical axis.

As to claim 6, G.De Gasperis et al. teaches the method according to claim 5, wherein said rotation axis is slanted within an angle range of up to 90 (figure 3)

The limitation of claims 7 and 8 has been addressed in G.De Gasperis et al. section 3 and Gradl et al (figures 1 and 3)

As to claim 9, G.De Gasperis et al. teaches the method according to claim 1 one of the foregoing claims, further comprising steps of generating further intermediate images of the object, each with another focal plane, respectively, wherein each said focal planes is adjusted by scanning an objective of the microscope parallel to the optical axis (The algorithm was shown to be robust under a wide range of operational conditions and, when coupled with a 1 Hz to 200 MHz computer-controlled signal generator and laser tweezers to select and hold the cell in place, the method allowed sustained automatic measurement of many complete ROT spectra per hour with minimal manual intervention (i.e. chamber load and flush, cell selection, focus/brightness adjustment). The laser tweezers allowed the operator to choose cells for measurement, page 526, column 2).

As to claim 10 G.De Gasperis et al. teaches the method according to claim 9, wherein said at least two different orientations of the object and said scanning an objective are conducted in an alternating mode (Better results are obtained using a quadratic estimator, being defined by a weighted average of the three angular positions, section 3), see also Gradl et al (figure 1).

As to claim 11 G.De Gasperis et al. teaches the method according to claim l one of the foregoing claims, wherein said positioning comprises suspending said at least one object in a liquid in said receptacle (The cell is suspended in a chamber between thin film polynomial electrodes and spins under the influence of an applied electric field. Four sinusoidal waveforms, having a quadrate phase relationship, are applied to the four electrodes and this creates a rotating field between the poles, section 2, and page 519).

As to claim 12, G.De Gasperis et al. teaches the method according to claim 1 one of the foregoing claims, wherein said evaluating the data sets comprises at least one step selected from

the group consisting of removing out- of-focus light and reconstructing a three dimensional map/image of the object (see figure 7).

As to claim 13, G.De Gasperis et al. teaches the method according to claim 1, wherein said at least one object comprises at least one eukaryotic cell, at least one prokaryotic cell and/or at least one artificial particle (ROT has been employed for characterizing mammalian cells [12–15], human platelets [16], yeast cells[4, 17, 18] and bacteria [19] as well as other bio-particles including liposomes [20] and protoplasts [21] without introducing any destructive interactions, section 1, Introduction).

As to claim 14, G.De Gasperis et al. teaches the method according to claim 1 one of the foregoing claims, wherein said microscope is used as a fluorescence microscope, a phase contrast microscope, a differential interference contrast microscope or a confocal microscope (table 1,note that The rotating electrical field for ROT experiments was provided by applying four sine waves in phase quadrature to the electrode array in the electro rotation chamber, section 4.1, page 522, see also laser tweezers, figure 4).

The limitation of claims 15-22 has been addressed in claim 1 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NANCY BITAR whose telephone number is (571)270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nancy Bitar/
Examiner, Art Unit 2624

/VIKKRAM BALI/
Supervisory Patent Examiner, Art Unit 2624